General

Guideline Title

Neck pain: revision 2017.

Bibliographic Source(s)

Blanpied PR, Gross AR, Elliott JM, Devaney LL, Clewley D, Walton DM, Sparks C, Robertson EK. Neck pain: revision 2017. J Orthop Sports Phys Ther. 2017 Jul;47(7):A1-A83. [247 references] PubMed

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Childs JD, Cleland JA, Elliott JM, Teyhen DS, Wainner RS, Whitman JM, Sopky BJ, Godges JJ, Flynn TW, American Physical Therapy Association. Neck pain: clinical practice guidelines linked to the International Classification of Functioning, Disability, and Health from the Orthopaedic Section of the American Physical Therapy Association. J Orthop Sports Phys Ther. 2008 Sep;38(9):A1-34. [185 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

NEATS Assessment

National Guideline Clearinghouse (NGC) has assessed this guideline's adherence to standards of trustworthiness, derived from the Institute of Medicine's report Clinical Practice Guidelines We Can Trust.

= Poor = Fair = Good = Very Good = Excellent

Assessment	Standard of Trustworthiness
NO	Disclosure of Guideline Funding Source
	Disclosure and Management of Financial Conflict of Interests
	Guideline Development Group Composition
UNKNOWN	Multidisciplinary Group
UNKNOWN	Methodologist Involvement
	Patient and Public Perspectives
	Use of a Systematic Review of Evidence
	Search Strategy
	Study Selection
	Synthesis of Evidence
	Evidence Foundations for and Rating Strength of Recommendations
	Grading the Quality or Strength of Evidence

	Benefits and Harms of Recommendations
	Evidence Summary Supporting Recommendations
	Rating the Strength of Recommendations
	Specific and Unambiguous Articulation of Recommendations
	External Review
	Updating

Recommendations

Major Recommendations

Levels of evidence (I–V) and grades of recommendation (A–F) are defined at the end of the "Major Recommendations" field.

Note: These recommendations and clinical practice guidelines are based on the scientific literature published prior to August 2016.

Pathoanatomical Features/Differential Diagnosis

Clinicians should perform assessments and identify clinical findings in patients with neck pain to determine the potential for the presence of serious pathology (e.g., infection, cancer, cardiac involvement, arterial insufficiency, upper cervical ligamentous insufficiency, unexplained cranial nerve dysfunction or fracture), and refer for consultation as indicated. (Grade of Recommendation: A)

Imaging

Clinicians should utilize existing guidelines and appropriateness criteria in clinical decision making regarding referral or consultation for imaging studies for traumatic and nontraumatic neck pain in the acute and chronic stages. (Grade of Recommendation: A)

Examination

Outcome Measures

Clinicians should use validated self-report questionnaires for patients with neck pain, to identify a patient's baseline status and to monitor changes relative to pain, function, disability, and psychosocial functioning. (Grade of Recommendation: A)

Activity Limitations and Participation Measures

Clinicians should utilize easily reproducible activity limitation and participation restriction measures associated with the patient's neck pain to assess the changes in the patient's level of function over the episode of care. (Grade of Recommendation: F)

Physical Impairment Measures

When evaluating a patient with neck pain over an episode of care, clinicians should include assessments of impairments of body function that can establish baselines, monitor changes over time, and be helpful in clinical decision making to rule in or rule out (1) neck pain with mobility deficits, including cervical active range of motion (ROM), the cervical flexion-rotation test, and cervical and thoracic segmental mobility tests; (2) neck pain with headache, including cervical active ROM, the cervical flexion-rotation test, and upper cervical segmental mobility testing; (3) neck pain with radiating pain, including neurodynamic testing, Spurling's test, the distraction test, and the Valsalva test; and (4) neck pain with movement coordination impairments, including cranial cervical flexion and neck flexor muscle endurance tests. Clinicians should include algometric assessment of pressure pain threshold for classifying pain. (Grade of Recommendation: B)

Diagnosis/Classification

Clinicians should use motion limitations in the cervical and upper thoracic regions, presence of cervicogenic headache, history of trauma, and referred or radiating pain into an upper extremity as useful clinical findings for classifying a patient with neck pain into the following categories:

- Neck pain with mobility deficits
- Neck pain with movement coordination impairments (including whiplash-associated disorder [WAD])
- Neck pain with headaches (cervicogenic headache)
- Neck pain with radiating pain (radicular)

(Grade of Recommendation: C)

Interventions

Neck Pain with Mobility Deficits

Acute

For patients with acute neck pain with mobility deficits:

Clinicians should provide thoracic manipulation, a program of neck ROM exercises, and scapulothoracic and upper extremity strengthening to enhance program adherence. (Grade of Recommendation: B)

Clinicians may provide cervical manipulation and/or mobilization. (Grade of Recommendation: C)

Subacute

For patients with subacute neck pain with mobility deficits:

Clinicians should provide neck and shoulder girdle endurance exercises. (Grade of Recommendation: B)

Clinicians may provide thoracic manipulation and cervical manipulation and/or mobilization. (Grade of Recommendation: C)

Chronic

For patients with chronic neck pain with mobility deficits:

Clinicians should provide a multimodal approach of the following:

- Thoracic manipulation and cervical manipulation or mobilization
- Mixed exercise for cervical/scapulothoracic regions: neuromuscular exercise (e.g., coordination, proprioception, and postural training), stretching, strengthening, endurance training, aerobic conditioning, and cognitive affective elements
- Dry needling, laser, or intermittent mechanical/manual traction

(Grade of Recommendation: B)

Clinicians may provide neck, shoulder girdle, and trunk endurance exercise approaches and patient education and counseling strategies that promote an active lifestyle and address cognitive and affective factors. (Grade of Recommendation: C)

Neck Pain with Movement Coordination Impairments

Acute

For patients with acute neck pain with movement coordination impairments (including WAD):

Clinicians should provide the following:

- Education of the patient to
  - Return to normal, nonprovocative preaccident activities as soon as possible
  - Minimize use of a cervical collar
  - Perform postural and mobility exercises to decrease pain and increase ROM
- Reassurance to the patient that recovery is expected to occur within the first 2 to 3 months.

(Grade of Recommendation: B)

Clinicians should provide a multimodal intervention approach including manual mobilization techniques plus exercise (e.g., strengthening, endurance, flexibility, postural, coordination, aerobic, and functional exercises) for those patients expected to experience a moderate to slow recovery with persistent impairments. (Grade of Recommendation: B)

Clinicians may provide the following for patients whose condition is perceived to be at low risk of progressing toward chronicity:

- A single session consisting of early advice, exercise instruction, and education
- A comprehensive exercise program (including strength and/or endurance with/without coordination exercises)
- Transcutaneous electrical nerve stimulation (TENS)

(Grade of Recommendation: C)

Clinicians should monitor recovery status in an attempt to identify those patients experiencing delayed recovery who may need more intensive rehabilitation and an early pain education program. (Grade of Recommendation: F)

Chronic

For patients with chronic neck pain with movement coordination impairments (including WAD):

Clinicians may provide the following:

- Patient education and advice focusing on assurance, encouragement, prognosis, and pain management
- Mobilization combined with an individualized, progressive submaximal exercise program including cervicothoracic strengthening, endurance, flexibility, and coordination, using principles of cognitive behavioral therapy
- TENS

(Grade of Recommendation: C)

Neck Pain with Headaches

Acute

For patients with acute neck pain with headache:

Clinicians should provide supervised instruction in active mobility exercise. (Grade of Recommendation: B)

Clinicians may provide C1-2 self-sustained natural apophyseal glide (self-SNAG) exercise. (Grade of Recommendation: C)

Subacute

For patients with subacute neck pain with headache:

Clinicians should provide cervical manipulation and mobilization. (Grade of Recommendation: B)

Clinicians may provide C1-2 self-SNAG exercise. (Grade of Recommendation: C)

Chronic

For patients with chronic neck pain with headache:

Clinicians should provide cervical or cervicothoracic manipulation or mobilizations combined with shoulder girdle and neck stretching, strengthening, and endurance exercise. (Grade of Recommendation: B)

Neck Pain with Radiating Pain

Acute

For patients with acute neck pain with radiating pain:

Clinicians may provide mobilizing and stabilizing exercises, laser, and short-term use of a cervical collar. (Grade of Recommendation: C)

Chronic

For patients with chronic neck pain with radiating pain:

Clinicians should provide mechanical intermittent cervical traction, combined with other interventions such as stretching and strengthening exercise plus cervical and thoracic mobilization/ manipulation. (Grade of Recommendation: B)

Clinicians should provide education and counseling to encourage participation in occupational and exercise activities. (Grade of Recommendation: B)

Definitions

Levels of Evidence*

Level	Intervention/Prevention	Pathoanatomic/Risk/Clinical Course/Prognosis/Differential Diagnosis	Diagnosis/Diagnostic Accuracy	Prevalence of Condition/Disorder	Exam/Outcomes
I	High-quality SR† containing consistent findings from multiple high-quality primary sources‡	SR of prospective cohort studies High-quality prospective cohort study§	SR of high-quality diagnostic studies High-quality diagnostic studyâ•` with validation	SR, high-quality cross-sectional studies High-quality cross-sectional study¶	SR of prospective cohort studies High-quality prospective cohort study
II	High- or acceptable-quality SR containing mostly consistent findings from generally high-quality primary sources, or Consistent findings from at least 1 high-quality large (n>100 in each arm) randomized controlled trial (RCT), or Consistent findings from more than 1 small, high-quality RCT	SR of retrospective cohort study Lower-quality prospective cohort study High-quality retrospective cohort study Consecutive cohort Outcomes study or ecological study	SR of exploratory diagnostic studies or consecutive cohort studies High-quality exploratory diagnostic studies Consecutive retrospective cohort	SR of studies that allows relevant estimate Lower-quality cross-sectional study	SR of lower-quality prospective cohort studies Lower-quality prospective cohort study
III	High- or acceptable-quality SR containing mostly consistent findings from moderate primary sources, or Mostly consistent findings from 1 high-quality RCT or more than 1 moderate-quality RCT	Lower-quality retrospective cohort study High-quality cross-sectional study Case-control study	Lower-quality exploratory diagnostic studies Nonconsecutive retrospective cohort	Local nonrandom study	High-quality cross-sectional study
IV	High- or acceptable-quality SR where higher-quality primary sources tend to favor a clear direction, or	Case series	Case-control study	--	Lower-quality cross-sectional study

Level	Intervention/Prevention	Pathoanatomic/Risk/Clinical Course/Prognosis/Differential Diagnosis	Diagnosis/Diagnostic Accuracy	Prevalence of Condition/Disorder	Exam/Outcomes
	Inconsistent findings from case-control studies or retrospective studies, or inconsistent findings from RCTs where the higher-quality trials tend to favor a clear direction (even when lower-quality trials favor the opposite), or Consensus statements from content experts				
V	Inconsistent evidence drawn from a low-rated (score of 5 or below on AMSTAR or SIGN scales) SR that may indicate the balance of evidence favoring one direction but with very low confidence, regardless of the quality of the primary sources, or Case series or individual expert opinion, or direct or indirect evidence from physiology, bench research, or theoretical constructs	Individual expert opinion	Individual expert opinion	Individual expert opinion	Individual expert opinion

Abbreviations: AMSTAR, Assessment of Multiple Systematic Reviews; RCT, randomized clinical trial; SIGN, Scottish Intercollegiate Guidelines Network; SR, systematic review.

*Adapted from Phillips B, Ball C, Sackett D, et al. Oxford Centre for Evidence-based Medicine - Levels of Evidence (March 2009). Available at: http://www.cebm.net/index.aspx?o=1025 . Accessed August 4, 2009. See also Appendix F in the original guideline document.
†SRs were rated using AMSTAR or SIGN criteria, where 8 or higher received a "high," 6 to 7 received an "acceptable," 4 to 5 received a "low," and below 4 received a "very low" score. Very low–quality reviews were not used.
‡Quality of the primary sources was calibrated to "high," "moderate," "low," and "very low" levels. Results from very low-quality primary sources were not used.
§Quality cohort study includes greater than 80% follow-up.
â•'High-quality diagnostic study includes consistently applied reference standard and blinding.
¶High-quality prevalence study is a cross-sectional study that uses a local and current random sample or censuses.

Method of Assigning Confidence to Recommendations

Grade	Strength of Evidence	Basis of Strength Assignment
A	Strong	One or more level I systematic reviews support the recommendation, providing evidence for a strong magnitude of effect
B	Moderate	One or more level II systematic reviews or a preponderance of level III systematic reviews or studies support the recommendation, providing evidence for a mild to moderate magnitude of effect
C	Weak	One or more level III systematic reviews or a preponderance of level IV evidence supports the recommendation, providing minimal evidence of effect
D	Conflicting	Higher-quality studies conducted on this topic disagree with respect to their conclusions and effect. The recommendation is based on these conflicting studies
E	Theoretical/foundational evidence	A preponderance of evidence from animal or cadaver studies, from conceptual models or principles, or from basic sciences or bench research supports this recommendation, providing theoretical/foundational evidence of effect
F	Expert opinion	Best practice to achieve a beneficial effect and/or minimize a harmful effect, based on the clinical experience of the guidelines development team

Clinical Algorithm(s)

An algorithm titled "Imaging Conditions for Suspected Spine Trauma from the American College of Radiology Appropriateness Criteria" is provided in the original guideline document.

Scope

Disease/Condition(s)

Neck pain

Guideline Category

Diagnosis

Evaluation

Management

Treatment

Clinical Specialty

Family Practice

Neurology

Physical Medicine and Rehabilitation

Radiology

Rheumatology

Sports Medicine

Intended Users

Health Care Providers

Physical Therapists

Physician Assistants

Physicians

Students

Guideline Objective(s)

- To describe evidence-based physical therapy practice including diagnosis, prognosis, intervention, and assessment of outcome for musculoskeletal disorders commonly managed by orthopaedic physical therapists
- To classify and define common musculoskeletal conditions using the World Health Organization's terminology related to impairments of body function and body structure, activity limitations, and participation restrictions
- To identify interventions supported by current best evidence to address impairments of body function and structure, activity limitations, and participation restrictions associated with common musculoskeletal conditions
- To identify appropriate outcome measures to assess changes resulting from physical therapy interventions in body function and structure as well as in activity and participation of the individual
- To provide a description of the practice of orthopaedic physical therapists to policy makers
- To provide information for patients, payers, and claims reviewers regarding the practice of orthopaedic physical therapy for common musculoskeletal conditions
- To create a reference publication for orthopaedic physical therapy clinicians, academic instructors, clinical instructors, students, interns, residents, and fellows regarding the best current practice of orthopaedic physical therapy

Target Population

Adult patients with neck pain

Interventions and Practices Considered

Diagnosis/Examination

- Assessment of pathoanatomical features
- Imaging
- Use of patient-reported outcome tools (e.g., Neck Disability Index [NDI], Patient-Specific Functional Scale [PSFS])
- Use of easily reproducible activity limitation and participation restriction measures
- Use of physical impairment measures
  - Cervical flexion-rotation test
  - Cervical and thoracic segmental mobility tests
  - Upper cervical segmental mobility test
  - Neurodynamic testing
  - Spurling's test
  - The distraction test
  - The Valsalva test
  - Cranial cervical flexion

- Neck flexor muscle endurance tests
- Algometric assessment of pressure pain threshold for classifying pain

Diagnosis and classification of neck pain according to International Statistical Classification of Diseases and Related Health Problems (ICD) and International Classification of Functioning, Disability, and Health (ICF) categories

Interventions

- Cervical, cervicothoracic, and thoracic manipulation/mobilization
- Neck, shoulder girdle, and trunk endurance exercises
- Neck and shoulder girdle stretching exercises
- Scapulothoracic and upper extremity strengthening
- Mixed exercise for cervical/scapulothoracic regions
  - Neuromuscular exercise (coordination, proprioception, postural training)
  - Stretching, strengthening, endurance training, aerobic conditioning, cognitive affective elements
- Neck range of motion (ROM) exercises
- Postural and mobility exercises
- Mobilization combined with individualized exercise program
- Comprehensive exercise program (including strength and/or endurance with/without coordination exercises)
- Transcutaneous electrical nerve stimulation (TENS)
- C1-2 self-sustained natural apophyseal glide (self-SNAG) exercise
- Short-term use of cervical collar
- Dry needling
- Laser
- Intermittent mechanical/manual traction
- Monitoring recovery status
- Education and counseling

Major Outcomes Considered

- Pain intensity
- Function
- Work status
- Medication usage
- Range of motion
- Mobility
- Self-rated disability
- Psychosocial functioning
- Rate of recovery
- Adverse events or side-effects

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Searches of Unpublished Data

Description of Methods Used to Collect/Select the Evidence

The authors of this guideline revision worked with research librarians possessing expertise in systematic reviews to perform a systematic search for concepts associated with neck pain in articles published from 2007 to August 2016 related to classification, examination, and intervention strategies for neck pain consistent with previous guideline development methods related to International Classification of Functioning, Disability and Health (ICF) classification. Primary electronic search methods were performed using a standard structured approach from January 2007 to August 2016 in the following databases: PubMed, Cochrane Library, Web of Science, CINAHL, ProQuest Dissertations and Abstracts, PEDro, ProQuest Nursing and Allied Health Sources, and EMBASE, by research librarians. The search strategy guided by PICOT-SD (Population, problem, or patients [P], Intervention [I], Comparison or control [C], Outcome [O], Time [T], Study design [SD]) was designed to locate systematic reviews, meta-analyses, or narrative reviews that addressed 6 clinical areas (classification, examination, intervention, harms, prognosis, and outcome measures), when applicable contrasting with a control or comparison treatments, and used at least 1 measurement property of an outcome measure in adult patients with neck pain or musculoskeletal neck conditions in primary to tertiary settings from immediate post-treatment to long-term follow-up. The study designs included reviews on interventions and cohort/case-control trials for prognosis, diagnostic, and outcome measurement studies. Secondary reviews were identified through several grey literature sources (references within eligible citations screened for any additional references, personal files from the investigative team, and content experts). See Appendix A in the original guideline document for example search strategies and Appendix B for example search dates and results.

In addition, the guideline revision team worked with, and benefited greatly from, the efforts of members of the International Collaboration on Neck Pain (ICON), a multidisciplinary group currently producing an extensive review of the literature on neck pain. Bridging methods and decision rules were guided by recommendations established by Whitlock et al. and Robinson et al. Additionally, recent publications on the lived experiences of people with neck pain were reviewed as part of the guideline authors' deliberations and implementation when creating the final recommendations.

In the Impairment/Function-Based Diagnosis and the Examination sections in the original guideline document, a narrative review is provided with emphasis placed on systematic reviews and meta-analyses when available. In the Interventions section, only systematic reviews and meta-analyses were considered in this revision. When there was a systematic review of reviews, those appraisals were used, and literature was searched for systematic reviews and meta-analyses published since the end date of the published review of reviews. If a systematic review or meta-analysis published prior to January 2007 and not included in the 2008 clinical practice guideline (CPG), or published after August 2016, was identified by the authors during writing, then that article was also appraised and included using methods similar to those recommended by Robinson et al. Articles contributing to recommendations were reviewed based on specified inclusion and exclusion criteria with the goal of identifying evidence relevant to physical therapist clinical decision making for adult persons with noncancer (neuromusculoskeletal) neck pain. The titles and abstracts of each article were reviewed independently by 2 members of the CPG development team for inclusion. See Appendix C in the original guideline document for inclusion and exclusion criteria. The full texts were then similarly appraised to obtain the final set of articles for contribution to recommendations. The team leader provided the final decision for rare (less than 10) discrepancies that were not resolved by the review team.

The ratings of the primary sources contained in the systematic reviews or meta-analyses were used by the team in making recommendations. If the systematic reviews or meta-analyses did not provide the necessary information (e.g., study quality, participant characteristics, stage of disorder) or there were discrepancies between the reviews, the reviewers obtained the information directly from the primary source. Quality ratings used in the systematic reviews came from a variety of tools (e.g., Cochrane Risk of Bias, PEDro). Rating of the body of evidence came from other tools (e.g., Grading of Recommendations, Assessment, Development and Evaluation [GRADE], Cochrane Collaboration Back and Neck Review Group), and the CPG team calibrated these ratings into high, moderate, low, and very low quality. Very low-quality evidence was not considered in this revision. Ratings of systematic reviews came from 2 tools (AMSTAR, Assessment of Multiple Systematic Reviews [AMSTAR] or the closely related Scottish Intercollegiate Guidelines Network [SIGN]), and these ratings were also calibrated into high, acceptable, low, and very low categories. Very low-quality reviews and findings from very low-quality primary sources were not considered in this revision. See Appendix D for a flow chart of articles and Appendix E for articles included in recommendations. Articles on topics that were not immediately relevant to the development of these recommendations, such as shockwave therapy or injection, were not subject to the systematic review process and were not included in the flow chart.

Number of Source Documents

- Manual therapy n = 18
- Exercise n = 43
- Education n = 7
- Physical agents n = 15
- Other n = 4

Refer to Appendix D in the original guideline document for a flow diagram of articles leading to intervention recommendations.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Levels of Evidence*

Level	Intervention/Prevention	Pathoanatomic/Risk/Clinical Course/Prognosis/Differential Diagnosis	Diagnosis/Diagnostic Accuracy	Prevalence of Condition/Disorder	Exam/Outcomes
I	High-quality SR† containing consistent findings from multiple high-quality primary sources‡	SR of prospective cohort studies High-quality prospective cohort study§	SR of high-quality diagnostic studies High-quality diagnostic study‡• with validation	SR, high-quality cross-sectional studies High-quality cross-sectional study¶	SR of prospective cohort studies High-quality prospective cohort study
II	High- or acceptable-quality SR containing mostly consistent findings from generally high-quality primary sources, or Consistent findings from at least 1 high-quality large (n>100 in each arm)	SR of retrospective cohort study Lower-quality prospective cohort study High-quality retrospective cohort study Consecutive cohort Outcomes study or ecological study	SR of exploratory diagnostic studies or consecutive cohort studies High-quality exploratory diagnostic studies Consecutive retrospective	SR of studies that allows relevant estimate Lower-quality cross-sectional study	SR of lower-quality prospective cohort studies Lower-quality prospective cohort study

Level	Intervention/Prevention	Pathoanatomic/Risk/Clinical Course/Prognosis/Differential Diagnosis	Diagnosis/Diagnostic Accuracy	Prevalence of Condition/Disorder	Exam/Outcomes
	randomized controlled trial (RCT), or Consistent findings from more than 1 small, high-quality RCT		cohort		
III	High- or acceptable-quality SR containing mostly consistent findings from moderate primary sources, or Mostly consistent findings from 1 high-quality RCT or more than 1 moderate-quality RCT	Lower-quality retrospective cohort study High-quality cross-sectional study Case-control study	Lower-quality exploratory diagnostic studies Nonconsecutive retrospective cohort	Local nonrandom study	High-quality cross-sectional study
IV	High- or acceptable-quality SR where higher-quality primary sources tend to favor a clear direction, or Inconsistent findings from case-control studies or retrospective studies, or inconsistent findings from RCTs where the higher-quality trials tend to favor a clear direction (even when lower-quality trials favor the opposite), or Consensus statements from content experts	Case series	Case-control study	--	Lower-quality cross-sectional study
V	Inconsistent evidence drawn from a low-rated (score of 5 or below on AMSTAR or SIGN scales) SR that may indicate the balance of evidence favoring one direction but with very low confidence, regardless of the quality of the primary sources, or Case series or individual expert opinion, or direct or indirect evidence from physiology, bench research, or theoretical constructs	Individual expert opinion	Individual expert opinion	Individual expert opinion	Individual expert opinion

Abbreviations: AMSTAR, Assessment of Multiple Systematic Reviews; RCT, randomized clinical trial; SIGN, Scottish Intercollegiate Guidelines Network; SR, systematic review.

*Adapted from Phillips B, Ball C, Sackett D, et al. Oxford Centre for Evidence-based Medicine - Levels of Evidence (March 2009). Available at: http://www.cebm.net/index.aspx?o=1025. Accessed August 4, 2009. See also Appendix F in the original guideline document.
†SRs were rated using AMSTAR or SIGN criteria, where 8 or higher received a "high," 6 to 7 received an "acceptable, 4 to 5 received a "low," and below 4 received a "very low" score. Very low–quality reviews were not used.
‡Quality of the primary sources was calibrated to "high," "moderate," "low," and "very low" levels. Results from very low-quality primary sources were not used.
§Quality cohort study includes greater than 80% follow-up.
â•'High-quality diagnostic study includes consistently applied reference standard and blinding.
¶High-quality prevalence study is a cross-sectional study that uses a local and current random sample or censuses.

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Levels of Evidence

Since the original neck pain clinical practice guideline (CPG) was published in 2008, publication of the results of a large number of trials

has coincided with an increased number of systematic reviews and reviews of reviews. The current update appraises high-level systematic reviews using updated criteria for levels of evidence and recommendations consistent with contemporary research methodology.

Individual systematic reviews, meta-analyses, and reviews of reviews were graded according to criteria adapted from the Centre for Evidence-Based Medicine, Oxford, United Kingdom for diagnostic, prospective, and therapeutic studies (www.cebm.net). In 4 teams of 2, each reviewer independently evaluated the quality of each article using a critical appraisal tool and assigned a level of evidence. A description of the grading system is provided in the "Rating Scheme for the Strength of the Evidence" field. See also Appendix F in the original guideline document for evidence level criteria details on procedures used for assigning levels of evidence (available at www.orthopt.org). Systematic review assessment of multiple systematic reviews (AMSTAR) scores are available in Appendix G, and articles containing very low-quality primary sources are listed in Appendix H (available at www.orthopt.org).

The levels of evidence were assigned with alignment to the definitions contained in the "Rating Scheme for the Strength of the Evidence" field.

Weaker diagnostic criteria and reference standards, improper randomization, no blinding, and less than 80% follow-up may add bias and threats to validity.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Content experts were appointed by the Orthopaedic Section of the American Physical Therapy Association (APTA) to conduct a review of the literature and to develop an updated neck pain clinical practice guideline (CPG) as indicated by the current state of the evidence in the field. The aims of the revision were to provide a concise summary of the evidence since publication of the original guideline and to develop new recommendations or revise previously published recommendations to support evidence-based practice.

The potential organizational and implementation barriers in applying the recommendations were discussed and considerations were folded into the expert opinion section following each evidence table.

Grades of Recommendation

The strength of the recommendation was graded according to the confidence in the evidence and the magnitude of effect as indicated in the "Rating Scheme for the Strength of the Recommendations" field.

When available, a second factor, the magnitude of effect versus harm, contributed to the recommendation, and was characterized according to the "Rating Scheme for the Strength of the Recommendations" field.

Rating Scheme for the Strength of the Recommendations

Method of Assigning Confidence to Recommendations

Grade	Strength of Evidence	Basis of Strength Assignment
A	Strong	One or more level I systematic reviews support the recommendation, providing evidence for a strong magnitude of effect
B	Moderate	One or more level II systematic reviews or a preponderance of level III systematic reviews or studies support the recommendation, providing evidence for a mild to moderate magnitude of effect
C	Weak	One or more level III systematic reviews or a preponderance of level IV evidence supports the recommendation, providing minimal evidence of effect
D	Conflicting	Higher-quality studies conducted on this topic disagree with respect to their conclusions and effect. The recommendation is based on these conflicting studies
E	Theoretical/foundational evidence	A preponderance of evidence from animal or cadaver studies, from conceptual models or principles, or from basic sciences or bench research supports this recommendation, providing theoretical/foundational evidence of effect
F	Expert opinion	Best practice to achieve a beneficial effect and/or minimize a harmful effect, based on the clinical experience of the guidelines development team

Magnitude of Effect Versus Harm: Grades of Recommendation

Beneficial Effect		Neutral Effect	Harmful Effect	
Strong	Weak	None	Weak	Strong
Desirable consequences clearly outweigh undesirable consequences. This considers the magnitude of effect (none, small, medium, large), numbers needed to treat, probability of harms, resources and patient burden, etc. A strong grade requires a medium to large effect with low risk of harms and low patient burden	Desirable consequences probably outweigh undesirable consequences (small to moderate effect, some risk of harms, higher burden)	Consequences equally balanced or uncertain (none or small effect, unclear harms, unclear	Undesirable consequences probably outweigh desirable consequences (probability of harms likely outweighs any small-to-moderate effect, burden might be high)	Undesirable consequences clearly outweigh desirable consequences (small effect, clear probability of harms or high patient burden)

Beneficial Effect		burden Neutral Effect	Harmful Effect	
Strong	Weak	None	Weak	Strong

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Clinical Validation-Pilot Testing

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

The guideline has been piloted among end users through International Federation of Orthopaedic Manipulative Physical Therapists (IFOMPT) member organizations, and through APTA, Inc. through a public posting.

Guideline Review Process and Validation

Experts in neck pain reviewed these clinical practice guidelines' (CPGs') content and methods for integrity, accuracy, and representation of the condition. The draft was also reviewed by: (1) representatives of member organizations of International Federation of Orthopaedic Manipulative Physical Therapists (IFOMPT) and members of the Orthopaedic Section of the American Physical Therapy Association (APTA), Inc. through a public posting, and (2) a panel of consumer/patient representatives and external stakeholders, such as claims reviewers, medical coding experts, academic educators, clinical educators, physician specialists, and researchers. All comments, feedback, and suggestions were considered for revision. Additionally, a panel of experts in physical therapy practice guideline methodology annually review the Orthopaedic Section of the APTA's International Classification of Functioning, Disability and Health (ICF)-based Clinical Practice Guidelines Policies and provide feedback and comments to the Clinical Practice Guidelines Coordinator and editors to improve the APTA's guidelines development and implementation processes.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

In the Impairment/Function-Based Diagnosis and the Examination sections in the original guideline document, a narrative review is provided with emphasis placed on systematic reviews and meta-analyses when available. In the Interventions section, only systematic reviews and meta-analyses were considered in this revision. When there was a systematic review of reviews, those appraisals were used, and literature was searched for systematic reviews and meta-analyses published since the end date of the published review of reviews.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Clinical prediction rules may prove helpful toward identifying patients who may respond well to a certain treatment.

Refer to the "Evidence Update" sections and the "Evidence Statements" in the original guideline document for specific benefits of the interventions.

Potential Harms

- For neck pain with mobility deficits, adverse events or side effects were rarely reported in the studies, and when reported were minor, transient, and of short duration. For manual therapy or exercise, the only consistently reported problem was a mild transient exacerbation of symptoms. For manipulation, rare but serious adverse events such as stroke or serious neurological deficits were not reported in any of the trials. Serious but rare adverse events for manipulation are known to occur. One study reported mild adverse events equal in treatment and placebo groups, including tiredness, nausea, headache, and increased pain following laser treatment.
- For physical therapy interventions on patients who could be classified as having neck pain with movement coordination impairments, adverse events or side effects were rarely reported in the studies, and when reported were minor, transient, and of short duration.
- For physical therapy interventions for neck pain with cervicogenic headache, adverse events or side effects were poorly reported in the studies, and when reported were minor, transient, and of short duration. For manual therapy or exercise, the only consistently reported problem was local discomfort or dizziness. For manipulation, rare but serious adverse events such as stroke or serious neurological deficits were not reported in any of the trials. Serious but rare adverse events for manipulation are known to occur. One study reported mild adverse events equal in treatment and placebo groups, including tiredness, nausea, headache, and increased pain following laser treatment.
- For physical therapy interventions for neck pain with radiating pain, adverse events or side effects were poorly reported in the

studies, and when reported were minor, transient, and of short duration.

Refer to the "Evidence Update" sections of the original guideline document for additional information.

Contraindications

Contraindications

Contraindications to magnetic resonance imaging (MRI) examination include, but are not limited to, a cardiac pacemaker or severe claustrophobia.

Qualifying Statements

Qualifying Statements

Statement of Intent

These guidelines are not intended to be construed or to serve as a standard of medical care. Standards of care are determined on the basis of all clinical data available for an individual patient and are subject to change as scientific knowledge and technology advance and patterns of care evolve. These parameters of practice should be considered guidelines only. Adherence to them will not ensure a successful outcome in every patient, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made based on clinician experience and expertise in light of the clinical presentation of the patient, the available evidence, available diagnostic and treatment options, and the patient's values, expectations, and preferences. However, it is suggested that significant departures from accepted guidelines should be documented in the patient's health records at the time the relevant clinical decision is made.

Refer to "Limitations to This CPG" in the original guideline document for additional information.

Implementation of the Guideline

Description of Implementation Strategy

The implementation tools planned to be available for patients, clinicians, educators, payers, policy makers, and researchers, and the associated implementation strategies, are listed in Table 5 of the original guideline document.

Implementation Tools

Patient Resources

Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Blanpied PR, Gross AR, Elliott JM, Devaney LL, Clewley D, Walton DM, Sparks C, Robertson EK. Neck pain: revision 2017. J Orthop Sports Phys Ther. 2017 Jul;47(7):A1-A83. [247 references] PubMed

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2017 Jul

Guideline Developer(s)

American Physical Therapy Association, Inc., The Orthopaedic Section - Medical Specialty Society

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Guideline Committee

Clinical Practice Guideline (CPG) Development Team

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Financial Disclosures/Conflicts of Interest

The guideline development group members declared relationships and developed a conflict management plan that included submitting a Conflict of Interest form to the Orthopaedic Section, American Physical Therapy Association (APTA), Inc. Articles that were authored by a group member were assigned to an alternate member for assessment. Partial funding was provided to the clinical practice guideline (CPG) development team for travel and expenses for CPG training and development; the content of this guideline was not influenced by this funding. The CPG development team maintained editorial independence.

A list of competing interests, conflicts of interest, and author contributions is available at www.orthopt.org (see also Appendix H in the original guideline document). Group members believe the guideline process and development of recommendations were free from influence from competing interests and conflicts of interest.

Interests that were disclosed include financial interests and secondary interests (e.g., personal, academic, political).

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Childs JD, Cleland JA, Elliott JM, Teyhen DS, Wainner RS, Whitman JM, Sopky BJ, Godges JJ, Flynn TW, American Physical Therapy Association. Neck pain: clinical practice guidelines linked to the International Classification of

Functioning, Disability, and Health from the Orthopaedic Section of the American Physical Therapy Association. J Orthop Sports Phys Ther. 2008 Sep;38(9):A1-34. [185 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the American Physical Therapy Association, Inc., Orthopedic Section Web site .

Availability of Companion Documents

A proposed model for examination, diagnosis, and treatment planning for patients with neck pain is available on the American Physical Therapy Association, Inc., Orthopedic Section Web site and in the original guideline document.

Patient Resources

The following is available:

Neck pain. Clinical practice guidelines help ensure quality care. JOSPT perspectives for patients. J Orthop Sports Phys Ther 2017;47(7):513. Available from the Journal of Orthopaedic & Sports Physical Therapy Web site .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This summary was completed by ECRI Institute on March 24, 2010. The information was verified by the developer on May 9, 2010. This summary was updated by ECRI Institute on November 1, 2017. The updated information was verified by the guideline developer on November 20, 2017.

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